



How Important Is A Promising QA Strategy?

The need to build smart and reliable applications requires QA teams to test end-to-end business processes



41% organizations admitted that there is a lack of **good testing approach** that fits the **Agile development** methods



Abstract

Meeting business expectations and customer satisfaction with the best software is the dream of any organization. Building high-quality software and delivering it on-time is what the development and testing teams aim for. To stay ahead of the competitors, organizations need to reduce the testing effort and time without compromising on the quality of the end result. Automation testing is the key and the test automation strategies are always the cornerstone in the process. The major challenges of manual testing such as maintaining code consistency, identifying duplicate codes, running and monitoring test scripts and many more can be easily addressed with the help of test automation. Without test automation in place, bugs can be undetected and easily slip into the production phase and later delivered to the end-users that can result in customer dissatisfaction and increased maintenance costs. Precisely, the job of the quality assurance teams becomes much easier by leveraging a promising test automation strategy along with an automation framework which helps them to make changes in the coding without having to go through a tedious process. This whitepaper briefs in detail the need to adopt a robust test automation strategy framework that can help organizations to build more scalable and reliable applications and websites.

Here is a glimpse of how a huge organization realized the need for a strong test automation strategy and a robust framework to overcome the challenges of manual testing and eventually increased their ROI easily.



Introduction

Lately, business leaders in various organizations are aware of the need to implement strong quality assurance, governance, and policy and process platform in order to achieve agile quality engineering in the delivery of their services. Almost all enterprises rely on technology to deliver products and services to customers. Most often, quality assurance is part of the internal business technology group that implements various systems within the enterprise. Most of the applications go through this cycle – upgrades, continuous enhancements and maintenance. A strong QA strategy is needed to ensure the systems always meet the business criteria. Hence QA needs to be implemented right from product initiation to implementation for the customer.

Best usage of resources
will help in achieving
greater results without
having to make much effort



Critical Factors Enterprises Must Consider For Quality Engineering

In order to achieve Quality Engineering, organizations and business leaders need to take certain features into consideration which can help them to implement the best possible solution.

Team Alignment & Clarity of Validation Goals

To be on the right track, the QA team needs to define goals that align with the business goals. One identified, the QA goals must be communicated on a company-wide level.

A successful QA team needs the following:

- Domain knowledge to understand the criticality of the applications
- Aware of the latest IT trends and new age technologies
- Unified team commitment and collaboration
- Each new release /project, expected outcomes
- Investment in cost and time the company expects
- Validation of usability, performance, requirement or delivery for every project

Testing Centre of Excellence

To be successful in achieving business goals, IT teams need to constantly enhance their TCOE, a framework that consists of process, resources, and technology that help the organizations in delivering high-quality results using knowledge, best practices, and resources. In short, organizations should ensure the following:

- Establishment of an agile governance model
- Usage of right tool and technology to support delivery pipeline
- Focus on the automation and development in QA/CI/CD pipeline
- Understand the needs of the project to provide all levels of testing services
- Analyze Quality Accountability, Risk Management
- Provide training and mentor-ship for the teams to be compliant

Test-driven Development

TDD is a methodology to think through the requirements or design before writing the functional code. This programming technique aims to improve productivity and minimize the time spent on debugging. The QA team needs to ensure the following:

- Prepare test scenarios before starting to write the code
- Inputs for the development teams
- Code Completion Acceptance Test to know about the kind of validation



More the importance
given to **test automation**,
the better the **automation**
results will be

Why Automation is Crucial?

Lately, business leaders in various organizations are aware of the challenges of manual testing that their teams are facing in the course of building software applications. Manual testing always involves cautiously experiencing application screens, attempting different utilization and input combinations, comparing the outcomes with the normal conduct and recording observations. Manual tests are done often regularly during the development cycles for source code changes and different circumstances like multiple environments and hardware configurations.

The advent of DevOps and Agile development methodologies require development teams to perform testing in parallel to development, testers to combine and work with the development team and create a continuous feedback loop. To overcome challenges like the need to be inherently proactive and to deliver newer products and features to the market within shorter durations, IT leaders are embracing automated software testing to validate the performance of software applications and websites. Automated software testing is critical for all sizes of software development organizations. Automation testing can perform what is done manually and much more than that. It is the best way to increase the effectiveness, efficiency, and coverage of any software testing. What makes a good test automation strategy are its automation frameworks or design patterns, and its ability to maintain constantly, release effective and reliable software applications at a rapid pace.



The privilege of using an automation framework is what helps the testing or QA teams with less testing experience, to handle and run complicated testing within shorter development cycles. However, the more importance is given to test automation, the better the automation results will be.

There are other major benefits of implementing test automation such as validating a common standard for the testing teams, enhance the testing process, easy management of the test code, minimize human error, effective analysis of the application software, ability to accomplish continuous testing and delivery, less usage of effort and money and time-saving. In short, test automation helps in achieving the above-mentioned advantages.





Test Automation Journey of a Leading Enterprise

The company is a leading fuel supplier in the US specialized in providing innovative solutions for various organizations across North America. They offer a wide range of solutions including fuels, natural gas and energy prices, and data management services. They wanted to build an application to support every facet of energy management needs, from purchasing, processing, and finance and encompass all aspects such as supply, trading, logistics, inventories, etc. When more new functionalities/services were added, the application's performance deteriorated. They faced these challenges since they did not have an automated testing solution and had to rely on manual testing. Their target was to build an enterprise application that supports all aspects of the energy supply chain. In the process, the customer was facing innumerable challenges with the time-consuming manual testing that resulted in high defect leakage and low product quality. The need for functionality testing was high since the product must be compatible with different platforms, whereas the product's performance was degrading after adding more services. Identification of the right automation tools, framework, and solution against the existing automation solution became arduous. For a company, as big as this, they must have the right approach designed to meet their needs to provide their customers with the best solutions and services. Bad quality application software can ruin the business in no time since you may lose an existing or prospective customer. That is why they were looking out for a testing partner who could assess the situation and help them build a stable & scalable application.

The company was **facing innumerable challenges** with the time-consuming **manual testing** that resulted in **high defect leakage and low product quality**

The company adopted **Hyper-Testing strategy** offered by Aspire systems to help them **test faster** than ever and **deliver high-quality software** in the market



Digital business is driving a faster pace of **delivery to support** the continuous delivery of incremental changes. Traditional testing teams cannot meet this pace nor the expanded view of quality required.

Want to try our **Automation Testing Strategy?**

Ping us now @
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The Need of the Hour

Most of the business leaders in the IT industry know the value and importance of testing a software application before being delivered to the end-user. So, what is the complicated part? It is to figure out the right testing strategy for one's organization since every application is designed with its own combination of testing requirements and the development teams are not alike.

Building the right Agile Test strategy

Both the development and testing teams organized together to know how to carry out this entire test automation process and build the right agile testing strategy. The following agile testing methodologies were implemented to help the company achieve its targets.

Agile Considerations:

Iteration 0 – This is the planning stage where everyone in the development and testing teams is organized and knows what needs to be done even before they start coding.

Shift-left Testing – It is best to test the application right from the development phase instead of waiting until the entire product is developed. The testing team should get along with the development team and product owners to understand the requirements and test the product simultaneously without wasting time.



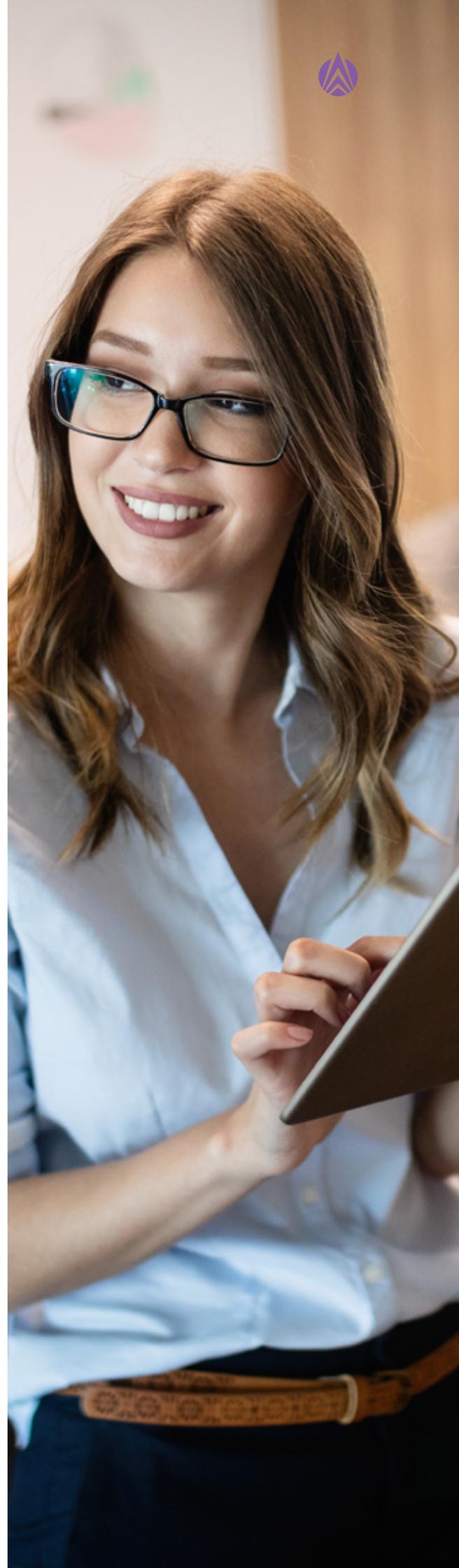
Test-Driven Development – Test scenarios should be created before the code is written make it simple and bug-free. The teams should implement TDD to write and correct the failed tests before writing new codes. This saves a lot of time and avoids duplication of code.

Continuous Performance – It is best to employ continuous performance and system monitoring during the production to identify the issues quickly and fix it right away. It also helps to get feedback for the development team to take forward and decide whether any performance optimization is required.

Incremental test automation – Each module of the application needs to be tested individually and later integrated incrementally and again tested to ensure smooth and seamless interaction of the modules. This results in fixing the issues in the earlier phase without any rework or extra cost.

Testing Approach Implemented

With the help of the automated Smoke and Regression testing, the teams ensured that the test automation suite is executed for every new code deployed. In addition, these testing methodologies made sure that the code is tested in each and every stage of development. The performance of the application was compared with the baseline and tested every metrics to identify any deviation against the baseline. In case of any deviation, it is immediately reported to both the technical and the development team with all the required observations for them to find the origin and rectify it. Along with the functionality and performance, the business process was also automated and tested continuously based on the requirements.





A recent research report about automation frameworks states that ***“Test automation frameworks, help us with test environments and test data suggesting test strategies, and maintaining overall governance.”***

AFTA 3.0

Reusable Scripts

UI, API, Security & Perf Testing

CI/CD Enabled

Cloud Testing Enabled

Cross Browser/Device Testing

Low Maintenance

Automation Framework: The Sidekick

There are very few automation frameworks available in the market that is designed to be compatible with any kind of software application. They clearly understood the need for an effective and successful approach to overcome the challenges of manual testing. They considered major factors like the importance of knowing the nature of the company's business, the problem statement, expectations of the organization, systems, software, business frameworks that can be supported, both short and long term goals of the organization. **Hyper-Testing** was offered to help them build a strong and reliable QA team to take care of their end-to-end testing requirements. This promising test automation solution called Hyper-Testing is an iterative and unified approach for designing and executing a test strategy that encompasses end-to-end testing of all application layers. This AI-enabled test automation strategy is a quality engineering solution that focuses on addressing the major challenges faced by conventional methods of testing. Augmented by a Selenium-based, AI-powered framework called **AFTA**, Hyper-Testing addresses test issues from all three dimensions, like processes, practices and tools and reusable assets to drive agile testing at greater speed and minimal costs. **AFTA 3.0**, an upgraded version allows the project teams to handle and maintain multiple automation components under a single framework. By implementing Hyper-Testing, the application was tested right from the development phase, which easily resulted in improved quality and productivity.

Like to know more about our **Hyper-Testing or AFTA**? Write to us now christina.sridhar@aspire.sys.com



Unlike the conventional methods of testing, Hyper-Testing aims for a holistic or 360° view of the application in order to identify all the possible areas that can influence the performance and functionality. The AI element in this testing solution allows the self-healing scripts to identify the occurring changes in the application that helps the testing teams to keep a tab on the modifications in the code and rectify them every now and then. Hyper-Testing abides by the universally adopted concept of 'test early-test often' to make the job of the testing teams easier.

The Impact in Numbers

Hyper-Testing helps the customer to re-establish themselves in the market with its innovative methods of services. This automation strategy helps them achieve performance test results for every single build that led them to serve their customers more efficiently and offer them a seamless experience. It does not just end there but eventually enable customers to deliver a quality product and achieve end-user satisfaction, minimize defect leakage to a great extent, and above all this scalable, rigorous, and effective test automation approach reduce the customer's dependence on manual testing efforts, fasten time-to-market metric and offer a trustworthy environment for them to innovate effortlessly. With Hyper-Testing, in hand, you can achieve a lot by investing very less.

Some of the other results of leveraging Hyper-Testing are:

- Upgraded Product Quality – Widespread test coverage and less than **4%** defect leakage
- **1200+** bugs logged in a release and **100+** bugs exposed on the new builds during the automated smoke tests
- Decreased, tool cost by **\$5000/year**
- **90%** effort cut down through automated smoke testing
- Faster feedback: Bugs were reported in an average turnaround time of fewer than **1.5 hours**



Best Practices

- Mind Map – Test Scenarios
- Bug bash to fix bugs that were never found earlier
- Knowledge transfer session on the new features – across the testing team
- Defect Prevention Plan: RCA on defect leakage for each iteration
- Implementation of continuous integration
 - Verified new builds by automated smoke tests through CI practice
 - Faster feedback on new code builds
- Continuous code quality through SonarQube
- Performance test reports Grafana: Data visualization & monitoring tool

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If they can achieve this, so can you. Contact us now christina.sridhar@aspiresys.com



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